

XXX.—On Two new Species of Slugs of the Genus *Microparmarion* from Borneo. By WALTER E. COLLINGE, F.Z.S., Assistant Lecturer and Demonstrator in Zoology and Comparative Anatomy, Mason University College, Birmingham.

[Plate IX.]

I HAVE recently received, through the kindness of Mr. Hugh Fulton, specimens of three slugs collected at Lombok, Borneo, by Mr. A. H. Everett, making the third series I have had the privilege of examining from the Malay Archipelago*.

Quite recently I have described two new species of *Parmarion* from Lombok †, one of which—*P. intermedium*—seems to form a connecting link between the genus *Parmarion* and Simroth's genus *Microparmarion*. The two species here described are probably referable to this latter genus.

There seems little doubt but that most of the species described as *Parmarion*, *Microparmarion*, and *Girasia* will have to be included in the genus *Girasia* (emend.), in which case *Microparmarion*, Simr., would form a subgenus or section. Before any such revision can be attempted, the various species of *Girasia* described by Godwin-Austen will require more fully diagnosing, especially the anatomy of the generative organs.

Having further material from India &c. awaiting examination, I hope later to be able to give a detailed account of the anatomy of these and allied genera.

I take this opportunity of again appealing to those naturalists who are in a position to collect material to lend their kind assistance.

Microparmarion Fultoni, sp. n.

(Pl. IX. figs. 1-5.)

Shell oval in outline, convex dorsally, thick, with membranaceous borders, which are covered by the mantle-lobes, apex obscure; colour brownish amber dorsally, somewhat whitish on the ventral side. Lines of growth clearly marked. Major diam. 16 millim.; minor diam. 11 millim.

Animal almost black, excepting beneath the mantle and at the sides of the body. Mantle-lobes black, anterior lobe larger on the right side than the left, possibly due to con-

* Proc. Zool. Soc. 1895, pp. 241-250, pls. xi.-xiv.; 1897, p. 778.

† *Ibid.* 1897, pp. 778-781, pl. xlv.

traction. Posterior portion of the body conspicuously overhangs the caudal mucous pore (Pl. IX. fig. 2). Rugæ faintly marked, elongated posteriorly. Peripodial groove distinct. Foot-fringe and lineoles black. Foot-sole divided into median and lateral planes, the latter being almost black and the former yellow in colour. Caudal mucous pore a vertical slit, which appears to extend to the foot-sole, such appearance being caused by a little groove which is bounded on each side by the foot-fringe (Pl. IX. fig. 1, *b*), which extends halfway up the sides of the body (Pl. IX. fig. 2). The sides of the mucous pore are almost black.

Length (in alcohol) 32 millim.; breadth of foot-sole in anterior region 5.5 millim.

Hab. Lombok (1500 feet), Borneo (*A. H. Everett*).

I have much pleasure in associating with this interesting form the name of Mr. Hugh Fulton, who has so kindly placed the material in my hands.

Anatomy of the Generative Organs.

The vestibule opens into the vagina, which is a wide and almost straight tube. At its upper portion an almost ductless receptaculum seminis opens; it is somewhat pyriform in shape, reminding one of the condition which obtains in *Parmarion intermedium*, Collge. (Pl. IX. figs. 3 & 4, *r.s.*). The penis exhibits two constrictions, which divide it into three portions, viz. a beak-shaped head, with a narrower portion below, and a globose proximal portion. The vas deferens passes off from the ventral side of the beak-shaped portion as in *Parmarion intermedium*, the retractor muscle having its attachment to the middle division. The free oviduct is a large wide tube expanding just before it joins the common duct, which latter is densely folded. The albumen-gland is large and peculiar in shape (Pl. IX. fig. 3, *alb.gl.*) and of an orange-red colour. The hermaphrodite gland is a comparatively large glandular body hidden in the liver and attached to the hermaphrodite duct, a long unconvoluted tube. The dart-sac (Pl. IX. fig. 3, *d.s.*) is a large thin-walled organ, exhibiting a slight enlargement at its proximal end and a fusiform head constricted off from the main arm at its distal end. Externally this upper portion was finely reticulated; whether or not this was due to the alcohol I cannot say. The dart (Pl. IX. fig. 5) is quite distinct in shape from that of any other species I am acquainted with; it consists of a fusiform head and an elongated and almost circular lower portion, narrowing slightly at its base. It is solid throughout, non-calcareous, and has no opening or slit.

Affinities.

Externally this species is not unlike a small example of *Parmarion intermedium*, Cllge., to which it is undoubtedly closely related. It possesses the same characters in the form of the penis as are common to *P. pupillaris*, Humb., *P. Weberi*, Simr., *P. Martensi*, Simr., *P. intermedium*, Cllge., *P. Everetti*, Cllge., and other species, viz. division into three portions, the third or distal one being beak-shaped. The peculiar shaped solid dart is unlike that of any other species of *Microparmarion* or *Parmarion*.

Microparmarion constrictus, sp. n.
(Pl. IX. figs. 6, 7.)

Externally this species is not unlike *Parmarion intermedium*, Cllge.; it differs, however, from that species in its smaller size, slightly lighter colouring, the smaller size of the mantle-lobes, and the lighter lateral planes of the foot-sole. Godwin-Austen* has previously drawn attention to the few distinguishing characters in the outward appearance of the species belonging to the genus *Parmarion*, and these apply with equal force to the species of *Microparmarion*.

Length (in alcohol) 35 millim.

Hab. Lombok (1500 feet), Borneo (*A. H. Everett*).

Anatomy of the Generative Organs.

The sessile receptaculum seminis at once indicates this species to belong to Simroth's genus *Microparmarion*. The penis (Pl. IX. fig. 6, *p.*) commences as a large bulbous organ, which forms the first division; the second portion is as in other species where the three divisions obtain, while the third terminates in a blunt beak-shaped head. The retractor muscle is attached to the inner side of the third division. The vas deferens passes off from the third division of the penis, slightly above the point of separation between the second and third divisions. The free oviduct, as in most species of *Microparmarion*, is short. The dart-sac is peculiar in form, being much folded and twisted upon itself (Pl. IX. fig. 6, *d.s.*); when unfolded it is as represented in figure 7. There was no dart present in the sac, which probably accounts for the manner of folding &c.

Affinities.

There seems to be little relation between this and any of

* *Ann. & Mag. Nat. Hist.* 1895, vol. xvi. pp. 434-437, pl. xix.

the known species. Should further specimens be obtained a more complete knowledge of the generative anatomy may throw further light on the subject. It is also desirable that the form and nature of the dart should be known.

With the above two species there is a small specimen, 26 millim. long, externally not unlike *M. constrictus*, but with a more ovoid shell, and it has both the median and lateral planes of the foot-sole the same colour—a bright yellow, I should think—in life. The internal organs were not in a very good condition, so for the present I am regarding it as a small example of *M. constrictus*.

I understand that Mr. Fulton will present the three specimens to the British Museum (South Kensington).

EXPLANATION OF PLATE IX.

Fig. 1. Microparmarion Fultoni, sp. n. Caudal mucous pore. *a*, slit-like pore; *b*, groove passing through the foot-fringe; *c*, sides of body; *d*, foot-fringe; *e*, lateral planes of foot-sole; *f*, median plane of foot-sole. The peripodial groove being inconspicuous, it is not shown in this figure.

Fig. 2. View from the right side of the terminal portion of the body.

Fig. 3. Generative organs.

Fig. 4. Receptaculum seminis.

Fig. 5. The dart.

Fig. 6. Microparmarion constrictus, sp. n. Generative organs.

Fig. 7. Dart-sac unfolded.

Lettering.

alb.gl. Albumen-gland.

d.s. Dart-sac.

f.ov. Free oviduct.

h.d. Hermaphrodite duct.

h.gl. Hermaphrodite gland.

ov. Oviduct.

p. Penis.

pr. Prostate.

r.m. Retractor muscle.

r.d. Receptacular duct.

r.s. Receptaculum seminis.

v. Vestibule.

v.d. Vas deferens.

vg. Vagina.

XXXI.—*A brief Bibliographical Résumé of the Erythraean Molluscan Fauna, with Descriptions of Sixteen Species from Aden.* By JAMES COSMO MELVILL, M.A., F.L.S.

[Plate XII.]

THE greater number of the marine shells dredged or otherwise collected by Commander E. R. Shopland, R.I.M., mostly in the immediate neighbourhood of Aden, have already been catalogued by him in a paper* read before the Bombay Natural

* Shopland, E. R., "List of Shells collected at Aden, 1892-95," Journ. Bombay Soc. x. pp. 217-235.